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C. GORDON HEWITT, D. Sc., DOMINION ENTOMOLOGIST

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Further Observations upon the Habits of  
the Western Wheat Stem Sawfly in  
Manitoba and Saskatchewan

By



NORMAN CRIDDLE

*Field Officer, Dominion Entomological Laboratory, Treesbank, Man.*

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## FURTHER OBSERVATIONS UPON THE HABITS OF THE WESTERN WHEAT STEM SAWFLY IN MANITOBA AND SASKATCHEWAN

BY NORMAN CRIDDLE, ENTOMOLOGICAL LABORATORY, TREESBANK, MAN.

ADDITIONAL data relating to the habits of the Western Wheat-stem Sawfly (*Cephus occidentalis*) has been obtained since the publication of Entomological Bulletin No. 11 which it seems wise to make available on account of the rather rapid spread of the insect during the last two years.

As has already been pointed out, the insect in its native state bred within the stems of certain wild grasses, particularly in those of the genus *Agropyron*. In sandy soils the species of grass most infested was *Agropyron richardsoni*, but as one proceeds westward or moves from sandy to richer soil the above species becomes less prevalent and its place is taken by *A. smithii*, a grass more closely related to our couch grass (*A. repens*) with very similar habits of spreading by means of underground root stocks. *A. smithii* is a very common grass on the western prairies and one of considerable economic importance as a fodder plant. In times of drouth its stems seldom attain the size sufficient to accommodate the sawfly larvæ, but under ordinary weather conditions at least a third of such stems are available and at times of abnormal rainfall probably 90 per cent would be suitable for the insect to breed in. Thus we see that the Western Wheat-Stem Sawfly has been dependent, to a large extent, upon precipitation even though there are always sufficient suitable grass stems to enable it to perpetuate itself from year to year. This is extremely important because, while the sowing of cereals, particularly wheat and rye, has placed an almost unlimited supply of food at the insect's disposal, there are, nevertheless, times when

the sawfly appears to disappear gradually from cultivated crops, as if such crops were not wholly suitable to its requirements. At such times it is dependent solely upon its native food plants, an absence of which might well provide for its extinction. Such an event however, is not probable, though we can see how the destruction of grass stems during the middle of July might well provide an immunity from attack for a number of years.

It will be seen from the above that the insect's perpetuation is apparently dependent upon certain wild grasses, even though it nominally infests cereals to a large extent. There is, however, one noteworthy exception. *Agropyron smithii*, as we have mentioned above, has a closed allied species in *A. repens*, in fact some botanists have classed them as near varieties, *repens*, however, is a stouter species. It has large stems as well as greener leaves; it is also a weed of the first rank. Its importance from an entomological point of view, however, lies in the fact that its larger stems prove remarkably well adapted to the requirements of the Western Wheat-stem Sawfly. Instead of providing 50 per cent of suitable stems under normal weather conditions as does *A. smithii*, *A. repens* produces almost a hundred per cent. Thus we can add to its objectionable nature as a weed by showing that it acts as a distribution agent for the Western Wheat-stem Sawfly.

Other grasses which have proved of greater importance as hosts to the sawfly than was thought to be the case at first, are the various species of Lyme grass—*Elymus* spp., most of which show a marked pre-



ference for deserted field, roadsides, etc. They are all bunch grasses and being perennials remain in the same situation year after year. The importance of this lies in the fact that the sawfly adults are not obliged to fly long distances in search of suitable grass-stems for oviposition. The surplus must, indeed, seek new plants but the species is nearly always assured of perpetuation in the vicinity.

As I have already pointed out, the continuous breeding of the Western Wheat-stem Sawfly in growing cereals is problematical. We have good reasons to suspect, however, that the grain stems are not altogether suitable for this purpose. One reason for this belief lies in the fact that mature larvæ in wheat stems are seldom as large as those found in wild grasses, as a matter of observation the wheat stems are too large beside being weaker than the grasses. Another reason leading to this belief is the actual disappearance of the insect from heavily infested fields after a few years, a departure certainly not due to parasites.

The points I have tried to bring out are that the Western Wheat-stem Sawfly still depends largely upon wild grasses for its perpetuation. That couch grass, *A repens*, is not only noxious as a weed but also as a breeding medium for the sawfly, and as it grows freely among the various cultivated crops it is probably a greater menace as a breeder of sawflies than any other species of the grass family.

#### ADDITIONAL METHODS OF CONTROL

Apart from deep ploughing between August 1st and June 1st of the following year, and the other methods recommended in Bulletin No. 11, it has been found that trap crops may also be used to considerable advantage. The method employed is to sow a narrow strip, one width of a seeder, between the previous season's infestation and the new crop, but as near to the former as possible. The trap crop should consist of either rye or wheat and should be sown as soon as possible in the spring so that it is well advanced before the sawflies emerge from the old stubble in June. The sawflies, habits of ovipositing upon the first available stems that they find will induce most of them to remain and breed upon the trap crop and thus provide immunity for the fields beyond. The trap crops can either be ploughed down about the middle of July or cut with a mower at that time, both methods being sufficient to destroy the larvæ residing within the stems. Couch grass when growing upon semi-packed soil usually has its entire stem above ground, a condition seldom met with in other members of the genus. It is thus possible to destroy the infested stubs by burning and consequently the larvæ within them are killed. In most instances, however, burning is not a practical means of killing the sawfly larvæ.



